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Five-Year Outcomes of Therapeutic Community Treatment of Drug-Involved Offenders After Release From Prison

James A. Inciardi
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With growing numbers of drug-involved offenders, substance abuse treatment has become a critical part of corrections. A multistage therapeutic community implemented in the Delaware correctional system has as its centerpiece a residential treatment program during work release—the transition between prison and community. An evaluation of this program followed 690 individuals. At 5 years, those who participated in the program were significantly more likely to be drug and arrest free. Furthermore, treatment graduates with or without aftercare had significantly greater probabilities of remaining both arrest free and drug free than did a no treatment comparison group in regular work release. Dropouts also were significantly more likely to be drug free, although not significantly less likely to have a new arrest than those without treatment. These data show that the implementation of such programs could bring about significant reductions in both drug use and drug-related crime.

Keywords: *treatment outcome; substance abuse; therapeutic communities; prison; recidivism*

The linkages between drug abuse and crime have been well documented, and recent field-based research has provided a general understanding of various aspects of the drugs-crime connection. In extensive follow-up studies of addict careers in Baltimore, for example, researchers found high rates of criminality among heroin users during those periods when they were active users and markedly lower rates during times of nonuse (Nurco, 1998).

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Studies conducted in New York City targeting the economics of the drug-crime relationship documented a clear correlation between the amount of drugs used and the amount of crime committed (Johnson et al., 1985). Furthermore, Miami-based research demonstrated that the amount of crime committed by drug users is far greater than anyone had previously imagined, that drug-related crime can at times be exceedingly violent, and that the criminality of street-drug users is far beyond the control of law enforcement (Inciardi, 1979; Inciardi & Pottieger, 1998; Inciardi & Surratt, 2001). Other research has reported similar conclusions (Anglin & Perrochet, 1998). Together, the overall findings suggest that, although the use of heroin, cocaine, crack, and other illegal drugs does not necessarily initiate criminal careers, drug use does intensify and perpetuate criminal activity. That is, street drugs seem to lock users into patterns of criminality that are more acute and enduring than those of other offenders.

The presence of substance abusers in criminal justice settings has also been well documented. A concomitant of drug-related criminality and the "war on drugs" of the 1980s and 1990s has been the increased numbers of drug-involved offenders coming to the attention of the criminal justice system. In fact, it has been reported that perhaps two thirds of those entering state and federal penitentiaries have histories of substance abuse (Mumola, 1999). This suggests that criminal justice settings offer excellent opportunities for assessing the treatment needs of drug-involved offenders and for providing treatment services in an efficient and clinically sound manner (Prendergast, Farabee, & Cartier, 2002). As a result, most prison systems in the United States have implemented substance abuse treatment programs as part of the overall correctional process. This process was greatly facilitated by the Office of Justice Programs' Residential Substance Abuse Treatment (RSAT) program, which provided significant funding for prison treatment to each state. The enabling legislation focused on therapeutic community treatment and highlighted the Delaware KEY/CREST program as models to emulate. Most of the new programs instituted have at least purported to be therapeutic communities (Harrison & Martin, 2001). Although some programming is available in all states, however, programs are still unavailable in the majority of prison facilities; where they do exist, few have undergone rigorous, long-term evaluation (Harrison & Martin, 2001).

For drug-involved criminal justice clients, it appears that those who remain in some type of treatment do better than those who drop out, are involuntarily discharged, or do not participate in treatment at all (Field, 1992; Wexler, Falkin, & Lipton, 1990). Outcome research, however, in the few

places where it has been attempted has usually involved short follow-up time frames and has included only limited use of comparison groups, standardized measurement instruments, multivariate models, and appropriate control variables. Longitudinal outcome studies of recidivism or relapse are uncommon. As such, an appropriate evaluation of the effectiveness of treatment for drug-involved offenders should longitudinally examine outcomes with a large enough sample to allow multivariate analyses. This article reports such an analysis of a multistage therapeutic community approach to the treatment of drug-involved offenders in correctional settings.

THERAPEUTIC COMMUNITY TREATMENT

Numerous drug abuse clinicians and researchers have expressed the opinion that the *therapeutic community*, commonly referred to as the *TC*, is perhaps the most viable form of treatment for drug-involved offenders, particularly for those whose criminality has resulted in incarceration (Leukefeld & Tims, 1988, 1992; Tims, De Leon, & Jainchill, 1994). Drug-involved offenders who come to the attention of state and federal prison systems are typically those with long arrest histories and patterns of chronic substance abuse, and the intensive nature of the TC regimen tends to be best suited for their long-term treatment needs (De Leon, 2000). Moreover, the therapeutic community is especially efficacious in a correctional institution because the TC is a total treatment environment isolated from the rest of the prison population—separated from the drugs, violence, and other aspects of prison life that tend to militate against rehabilitation. The primary clinical staff members in such programs are typically former substance abusers who also underwent treatment in therapeutic communities. The treatment perspective in the TC is that drug abuse is a disorder of the whole person, that the problem is the *person* and not the drug, that addiction is a *symptom* and not the essence of the disorder, and that the primary goal is to change the negative patterns of behavior, thinking, and feeling that predispose drug use (De Leon, 1994, 1997, 2000).

Research on community-based residential TCs has found them to be most effective for those who remain in treatment the longest (Condelli & Hubbard, 1994; McLellan & Alterman, 1991; Simpson, Savage, & Lloyd, 1979; Yablonsky, 1989). In fact, there is consensus throughout studies and modalities that the longer a client stays in treatment, the better the outcome in terms of declines in drug use and criminal behavior (Anglin & Hser, 1990; De Leon, 1984).

*A MULTISTAGE THERAPEUTIC
COMMUNITY TREATMENT CONTINUUM*

Based on a wide body of literature in the fields of both treatment and corrections, combined with clinical and research experiences with correctional systems and populations (Ball & Ross, 1991; Brown, 1979; Chaiken, 1989; Chavaria, 1992; Field, 1992; Forcier, 1991; Gossop, Green, Phillips, & Bradley, 1990; Hall, Havassy, & Wasserman, 1990; Hubbard et al., 1989; Simpson & Sells, 1982; Wexler, Falkin, Lipton, Rosenblum, & Goodloe, 1988; Wexler et al., 1990), it would appear that the most effective strategy would involve three stages of therapeutic community treatment intervention (Inciardi, Lockwood, & Martin, 1994; Martin, Butzin, & Inciardi, 1995). Each stage in this continuum is an adaptation to the client's changing correctional status: incarceration, work release, and parole (or another form of community supervision). This approach recognizes that "the connection between rehabilitation efforts in prison and the process of integration into society after release is probably one of the most feeble links in the criminal justice system" (Wexler & Williams, 1986, pp. 221-230).

The primary stage of treatment should consist of a prison-based therapeutic community (Inciardi et al., 1994). Segregated from the negativity of the prison culture, recovery from drug abuse, and the development of prosocial values in the prison TC involve essentially the same mechanisms seen in community-based TCs (see De Leon, 1994; Martin et al., 1995). Therapy in this stage should be an ongoing and evolving process over 12 months with the potential for the resident to remain slightly longer, if needed. Moreover, it is important that TC treatment for inmates begin *while they are still in the institution*. In a prison situation, time is one of the few resources that most inmates have in abundance. The competing demands of family, work, and neighborhood peer groups are absent. Thus, there is the time and opportunity for focused and comprehensive treatment, perhaps for the first time in a drug offender's career. In addition, there are other new opportunities presented: to interact with "recovering addict" role models, to acquire prosocial values and a positive work ethic, and to initiate a process of understanding the addiction cycle.

The secondary stage of treatment should be a *transitional* therapeutic community in a work-release setting. Since the 1970s, work release has become a widespread correctional practice for felony offenders. It is a form of partial incarceration whereby inmates who are approaching their release dates are permitted to work for pay in the free community but must spend

their nonworking hours either in the institution or, more commonly, in a community-based work-release facility. Although graduated release of this sort carries the potential for easing an inmate's process of community reintegration, there is a negative side as well, especially for those whose drug involvement served as the gateway to prison in the first place. Inmates are exposed to groups and behaviors that can easily lead them back to substance abuse, criminal activities, and reincarceration. Since work-release populations mirror the institutional populations from which they came, there are still the negative values of the prison culture, but in addition, street drugs and street norms abound. As such, the transitional work-release TC should be similar to that of the traditional therapeutic community. There should be the *family setting* removed from as many of the external negative influences of the street and inmate cultures as is possible. The clinical regimen in the work-release TC must, however, be modified to address the correctional mandate of work release. That is, in addition to intensive therapeutic community treatment, clients must prepare for and obtain employment in the free community.

In the tertiary stage (aftercare), clients will have completed work release and will be living in the community under the supervision of parole or some other supervisory program. For those individuals who entered work release after serving mandatory fixed sentences, there is no parole requirement and hence no community supervision. Treatment intervention in this stage should involve outpatient counseling and group therapy. Clients should be encouraged to return to the work-release TC for refresher/reinforcement sessions, to attend weekly groups, to call on their counselors on a regular basis, and to spend one day each month at the facility.

This multistage model has been operating in the Delaware correctional system since the mid-1990s. The treatment regimen is intensive, and the in-prison phase follows the traditional models of residential therapeutic community treatment that have been described at length in the literature (see De Leon, 1994, 1997, 2000). The treatment regimen in the work-release TC follows a 5-phase model over a 6-month period. Phase 1 is composed of entry, assessment, evaluation, and orientation, and it lasts approximately 2 weeks. New residents are introduced to the house rules and schedules by older residents. Each new resident is also assigned a primary counselor, who initiates an individual needs assessment. Participation in group therapy is limited during this initial phase so that new residents can become familiarized with the norms and procedures at the facility.

Phase 2 emphasizes involvement in the TC community, including such activities as morning meetings, group therapy, one-on-one interaction, confrontation of other residents who are not motivated toward recovery, and the nurturing of the newer people in the environment. During this phase, resi-

dents begin to address their own issues related to drug abuse and criminal activity in both group sessions and during one-on-one interactions. As well, they begin to take responsibility for their own behaviors by being held accountable for their attitudes and actions in group settings and in informal interactions with residents and staff. Residents are assigned job functions aimed at assuming responsibility and learning acceptable work habits, and they continue to meet with their primary counselors for individual sessions. The primary emphasis in Phase 2 is, however, on becoming an active community member through participating in group therapy and fulfilling job responsibilities necessary to facility operations. This phase lasts approximately 8 weeks.

Phase 3 continues the elements of Phase 2 and stresses role modeling and overseeing the working of the community on a daily basis (with the support and supervision of the clinical staff). During this phase, residents are expected to assume responsibility for themselves and to hold themselves accountable for their attitudes and behaviors. Frequently, residents in this phase will confront themselves in group settings. They assume additional job responsibilities by moving into supervisory positions, thus enabling them to serve as positive role models for newer residents. They continue to have individual counseling sessions, and in group sessions they are expected to help facilitate the group process. Phase 3 lasts for approximately 5 weeks.

Phase 4 initiates preparation for gainful employment, including mock interviews, seminars on job seeking, making the best appearance when seeing a potential employer, developing relationships with community agencies, and looking for ways to further educational or vocational abilities. This phase focuses on preparing for reentry to the community and lasts approximately 2 weeks. Residents continue to participate in group and individual therapy, and to be responsible for their jobs in the treatment facility. Additional seminars and group sessions are, however, introduced to address the issues related to finding and maintaining employment and housing as well as returning to the community environment.

Phase 5 involves *reentry*, that is, becoming gainfully employed in the outside community while continuing to live in the work-release facility and serving as a role model for those at earlier stages of treatment. This phase focuses on balancing work and treatment. As such, both becoming employed and maintaining a job are integral aspects of the TC work-release program. During this phase, residents continue to participate in house activities such as seminars and social events. They also take part in group sessions addressing issues of employment and continue treatment after leaving the TC work-release facility. In addition, residents begin to prepare to leave the facility. They open a bank account and begin to budget for housing, food, and utili-

ties. At the end of approximately 7 weeks, which represents a total of 26 weeks at the work-release TC, residents have completed their work-release commitment and are free to live and work in the community as program graduates.

A comprehensive research program has been established to examine the effectiveness of various components and combinations of the model. The basic hypothesis of this article is that drug-involved offenders receiving transitional treatment in a work-release therapeutic community, followed by aftercare, will have significantly lower rates of relapse and recidivism in both the short and long term than those receiving little or no treatment. Earlier studies have examined the effectiveness of the Delaware program 18 months and 42 months after release. Studies examining the 18-month follow-up data found significant effects for those who received any transitional treatment in work release, even if they did not complete the treatment (Inciardi, Martin, Butzin, Hooper, & Harrison, 1997). Subsequent analyses looking at 42-month follow-up data indicate, however, that significant and substantial outcome effects (reduced relapse and recidivism) really occur for those who complete the transitional treatment and particularly for those who undertake aftercare (Martin, Butzin, Saum, & Inciardi, 1999). A notable finding from both the 18- and 42-month follow-up studies is a lack of substantial long-term effects for in-prison treatment alone. This calls into question reliance on only prison treatment for criminal justice offenders. The Office of Justice Programs' funding of the RSAT initiative forced most states to focus their new treatment initiatives on prison treatment, yet it appears that long-term effects are most apparent when residential treatment is followed by aftercare. Besides the Delaware work, recent research by Knight, Simpson, and Hiller (1999) and Wexler, Melnick, Lowe, and Peters (1999) has supported this conclusion. The following analyses take the consideration forward in time by examining the 5-year outcomes of the same cohort of correctional clients.

METHODS

In the Delaware correctional system, those reaching eligibility for work-release status are classified based on criminal history and correctional counselor interviews. As such, work-release TC program assignments are made by treatment and correctional staff. Those classified as approved for work release with a recommendation for drug treatment between 1991 and 1997 comprise the present sample ($N = 1,077$). Because the number of those so classified exceeded the capacity of the treatment programs during that period, however, those eligible were assigned to either treatment or to regular

work release—depending on the availability of a treatment opening at the time of assignment. As such, a *no treatment* group was available for comparison. An exception to this general process was that priority for entering the program was given to graduates of treatment programs within the prison and to those with direct judicial sentencing orders that required treatment participation as a condition for release. Additional comparisons of treatment graduates with and without aftercare were possible because the aftercare component was not operational until 1996, whereas the other stages of treatment had been implemented several years earlier. Once aftercare was fully established, all graduates were expected to participate.

The research complied fully with the special protections for prisoners as research subjects (Protection of Human Respondents, 1983). Specifically, none of the members of the University of Delaware's Institutional Review Board (IRB) had any association with the Delaware Department of Correction; one member of the IRB was a former inmate and served on the IRB as a prisoner representative and advocate (Section 46.304); procedures for the recruitment of clients/participants into the treatment programs under study were determined by treatment providers in conjunction with the Department of Correction and were independent of the research project; participation in the research was voluntary; clients were not coerced in any manner to participate in the project, nor was there coercion of any type after a client had been selected for project participation; assurances were in place that the treatment program and the Department of Correction would not take into account a prisoner's participation or nonparticipation in the project in making treatment progress and treatment/prison-release decisions (Section 46.305); and the study, in that it involved "research on social and psychological problems such as alcoholism and drug addiction," constituted research permitted by the National Institutes of Health (NIH), Public Health Service (PHS), and the U.S. Department of Health and Human Services (HHS) involving prisoners as respondents (Section 46.306).

The research protocol includes baseline and multiple follow-up interviews with all treatment and comparison clients as well as HIV and urine testing at each contact. The baseline interview is administered in prison prior to an inmate's transfer to work release. The first follow-up interview occurs 6 months hence, corresponding with graduation from the work-release TC (for the treatment groups) or completion of regular work release (for the comparison group). Subsequent interviews have been conducted 18, 42, and 60 months after baseline. Treatment dropouts are also followed. Interviews at baseline and each subsequent follow-up interview are lengthy, representing 700 variables per administration, including data on basic demographics, living situations, criminal history, drug-use history, treatment history, sexual

behavior and attitudes, HIV risks, self-esteem, sensation-seeking, and physical and mental health. Previous use of a series of illegal drugs was measured on a Likert-type scale ranging from 0 (*no use*) to 6 (*use more than once a day*) in the 6 months prior to incarceration. The data collection instruments include much of the Addiction Severity Index and the Risk Behavior Assessment developed by the National Institute on Drug Abuse. It is important to note that these instruments were administered by the researchers *after* client selection and not as part of the client recruitment process. Follow-up surveys elicit detailed event history information on the intervening periods.

Participation in the research project is voluntary, and research subjects are paid up to \$50 at each of the testing intervals—\$25 for completing the questionnaire and \$25 for giving a urine sample. More than 97% of those interviewed provided a urine specimen. Of the original cohort of 1,077, 8.3% ($N = 89$) were either deceased or located out of state at the 42-month follow-up. Of the remaining respondents, 69.8% were included in the 42-month data. These 690 participants include 472 who were assigned to the transitional treatment program, the work-release TC, and a comparison group of 218 who were similarly classified but assigned to regular work release. The follow-up rate for the treatment group was slightly, although not significantly, higher (70.9%) than that of the “no treatment” group (66.1%). For the 60-month data reported, there are fewer cases. Some of this is additional sample attrition, but 100 had not yet reached the 60-month time period. So of those eligible for the 60-month interview, 540 (91.5%) were interviewed and included in the analyses, representing 63.8% of the eligible baseline cohort.

The dependent variables for the analyses presented here are dichotomous measures of relapse to illegal drug use and rearrest through the 42 and 60 months of follow-ups. To be considered *drug free*, the respondent must have reported *no* illegal drug use *and* have tested negative for drugs on the urine screen at every follow-up point. Similarly, the criteria for *arrest free* included no self-reports of arrest and no official arrest records for new offenses since release from prison.

The first set of analyses reported below include all participants distinguished by intent to treat at 42 and 60 months after release from prison. This is done to verify the significant effects of treatment. Subsequent analyses then explore differences among the treated group in terms of completion of transitional treatment and participation in aftercare. Statistical analyses used multivariate logistic regression with treatment status, gender, race, age, criminal history, and history of drug use and treatment as predictors of relapse and recidivism. Use of these *covariate* predictors was designed to control for potential group differences caused by the inclusion of some participants who were not randomly selected into the treatment groups. Group means and per-

TABLE 1: Sample Characteristics by Treatment Experience for Respondents With 42-Month Follow-Up

	<i>All Treatment Groups</i>	<i>No Treatment Group</i>	<i>Dropouts</i>	<i>Graduates</i>	<i>Graduates With Aftercare</i>
N	472	218	166	138	168
African American	74.6%	66.7%	69.9%	81.8%	73.3%
Male	75.9%	82.2%	82.5%	74.5%	70.3%
Prior drug treatment	68.1%	74.0%	70.5%	72.3%	62.2%
Mean prior level of drug use, 0 (none) to 6 (several times daily)	4.8	4.2	4.8	4.7	4.9
Mean age	30.4	29.6	29.2	30.6	31.4
Mean number of times in prison	4.1	4.1	4.4	4.0	3.8

centages on these covariates are shown in Table 1. Although at baseline, the *treatment* and *no treatment* groups differ significantly on only one of the demographic, criminal history, and drug covariate variables examined here, there are differences in race, gender, and prior treatment that approach significance. The one variable with a statistically significant difference at baseline was frequency of drug use prior to incarceration, with the treatment group reporting more drug involvement prior to prison than the no treatment group.

The use of these measures of covariates expected to be related to the outcomes of arrest and relapse allows for a degree of statistical control for possible baseline differences between groups that may exist in this *naturalistic* experimental comparison. Such controls give confidence that findings of change over time are not the function of differences in initial risk factors (see Martin et al., 1999, for a more complete discussion of statistical control for group differences). Each analysis entered all variables simultaneously in single-step models. For analyses of arrest outcomes, drug treatment was dropped in the final model as a predictor because it had little empirical or logical support.

RESULTS

Table 2 shows the results from the logistic regression analyses for drug-free status at 42 months after release from prison. Treatment participation was the substantially largest predictor, and age and frequency of prior drug use were additional significant predictors. Participation in the transitional

TABLE 2: Logistic Regression Predicting No Illicit Drug Use Through 42 Months After Release From Prison, as a Function of Participating in Treatment and of Demographic, Drug Use, and Criminal History Variables

	<i>Regression Coefficient</i>	<i>Standard Error</i>	<i>Odds Ratio</i>	<i>Significance</i>
Treatment participant	1.50	.31	4.49	< .001
Age (years)	.04	.02	1.04	.008
Female = 1, male = 0	.03	.25	1.03	.907
African American = 1, other = 0	-.16	.22	0.85	.474
Number of times in prison	-.04	.04	0.96	.401
No prior drug treatment	.26	.23	1.30	.256
Prior level of drug use, 0 (none) to 6 (several times daily)	-.14	.05	0.87	.007
Constant	-3.37	.82	—	< .001

Nagelkerke $R^2 = .115$.

TABLE 3: Logistic Regression Predicting No New Arrest Through 42 Months After Release From Prison, as a Function of Participating in Treatment and of Demographic, Drug Use, and Criminal History Variables

	<i>Regression Coefficient</i>	<i>Standard Error</i>	<i>Odds Ratio</i>	<i>Significance</i>
Treatment participant	.54	.18	1.71	.003
Age (years)	.07	.01	1.07	.001
Female = 1, male = 0	.43	.20	1.54	.015
African American = 1, other = 0	.17	.17	1.19	.317
Number of times in prison	-.13	.04	0.88	.001
Prior level of drug use, 0 (none) to 6 (several times daily)	-.04	.04	0.96	.325
Constant	-3.14	.58	—	< .001

Nagelkerke $R^2 = .108$.

treatment program more than quadrupled the odds of remaining drug free. Older participants were significantly more likely to have been abstinent. Each increment in the frequency of prior drug use had a negative association, reducing the odds of remaining drug free by over 10%.

Treatment participation, although a smaller effect than that for drug status, was also a significant predictor of criminal recidivism at 42 months (Table 3), with a 70% reduction in the odds of a new arrest for those assigned to treatment. Of course, the incidence of drug use represents something of an outside limit to the incidence of rearrest. The drug use monitored here is illicit behavior, and indeed the largest category of rearrests is for drug charges. In contrast to drug use, criminal recidivism was also related to gender, with women sig-

TABLE 4: Logistic Regression Predicting No Illicit Drug Use Through 60 Months After Release From Prison, as a Function of Participating in Treatment and of Demographic, Drug Use, and Criminal History Variables

	<i>Regression Coefficient</i>	<i>Standard Error</i>	<i>Odds Ratio</i>	<i>Significance</i>
Treatment participant	1.27	.31	3.54	< .001
Age (years)	.02	.02	1.02	.295
Female = 1, male = 0	.34	.30	1.41	.252
African American = 1, other = 0	.15	.28	1.16	.592
Number of times in prison	-.01	.06	0.99	.899
No prior drug treatment	.52	.27	1.69	.049
Prior level of drug use, 0 (none) to 6 (several times daily)	-.20	.06	0.82	.001
Constant	-3.84	.98	—	< .001

Nagelkerke $R^2 = .111$.

nificantly less likely to have been rearrested. As with drug use, the probability of rearrest was significantly lower for older participants. The latter effect has been a common finding of the “maturing out” of criminal behavior (Gossop et al., 1990; Gottfredson & Hirschi, 1990). In addition, previous number of incarcerations was a significant predictor of subsequent rearrest.

Table 4 shows the results from the logistic regression analyses for drug-free status at 60 months after release from prison. The results are reasonably consistent with those at 42 months. Treatment participation remained the substantially largest predictor, and baseline frequency of drug use remained a significant predictor, although age was no longer a significant predictor. Participation in the transitional treatment program still more than tripled the odds of remaining drug free. Additionally, having no previous treatment experience was now a significant predictor of relapse to drug use.

Table 5 shows the results from the logistic regression analyses for arrest-free status at 60 months after release from prison. Treatment participation, age, and gender remained significant predictors, each with generally equivalent predictive power. Number of previous incarcerations was, however, no longer a significant predictor.

Subsequent to establishing that the treatment group as a whole was significantly different than the comparison group, additional analyses examined the impact of particular components of treatment, dividing the treatment group into three stages: dropouts, graduates without aftercare, and graduates who did participate in aftercare. Because any effects of these gradations could be interpreted as reflecting that simply more time in treatment is likely

TABLE 5: Logistic Regression Predicting No New Arrest Through 60 Months After Release From Prison, as a Function of Participating in Treatment and of Demographic, Drug Use, and Criminal History Variables

	<i>Regression Coefficient</i>	<i>Standard Error</i>	<i>Odds Ratio</i>	<i>Significance</i>
Treatment participant	.48	.20	1.61	.017
Age (years)	.05	.02	1.05	.002
Female = 1, male = 0	.54	.22	1.71	.015
African American = 1, other = 0	.27	.20	1.31	.189
Number of times in prison	-.06	.05	0.94	.197
Prior level of drug use, 0 (none) to 6 (several times daily)	-.03	.05	0.97	.541
Constant	-3.26	.67	—	< .001

Nagelkerke $R^2 = .065$.

to produce better outcomes, an additional variable of time in treatment was added to the regression model for these analyses.

Of particular interest are differences between those who successfully completed the program and those who failed to complete. The treatment program, in contrast to regular work release, does not allow any outside unsupervised time during the first 3 months of the 6-month program. Most of the treatment failures thus come after that time, when the opportunities for violations such as curfew infractions and positive urine tests become much more probable. Therefore, treatment dropouts have a substantial amount of treatment experience.

Additional logistic regression analyses were conducted with the same variables as above but with treatment coded at four levels: no treatment, dropouts, graduates, and graduates with aftercare, with specific contrasts comparing each of the treated groups to the group without treatment. Probability estimates for each comparison group (Figure 1) were calculated as $1/(1+e^{-Z})$, where Z is the sum of the products of each group value by its regression coefficient, with each of the other variables entered as their coefficient multiplied by the mean value for that variable in the sample.

Again, Figure 1 shows consistent effects throughout these time periods, reflected in identical patterns of significance for both the 42- and 60-month data. Prison releasees who completed therapeutic community treatment with or without aftercare had significantly greater probabilities of remaining both arrest free and drug free at both time points than did those without treatment. Treatment dropouts were slightly, though not significantly, less likely to be

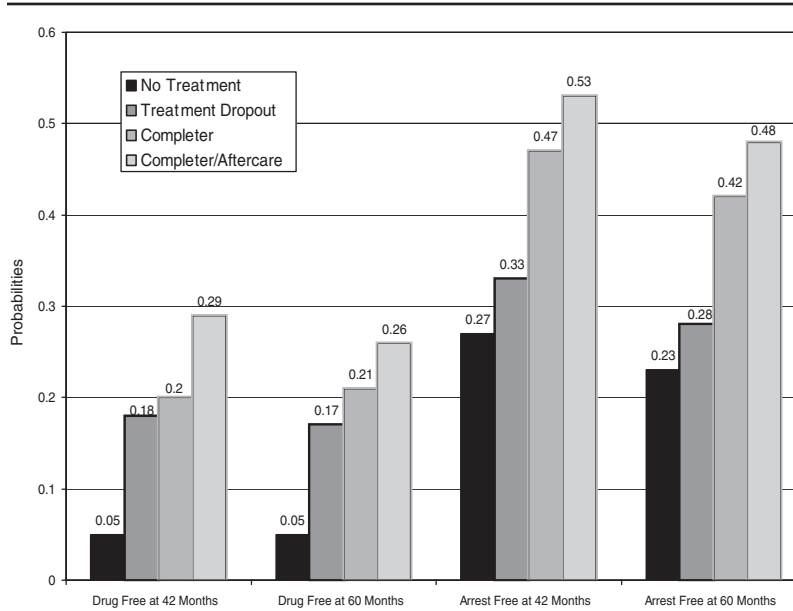


Figure 1: Estimated probabilities for avoiding criminal recidivism and relapse to illicit drug use as a function of level and success of treatment participation. Estimates are derived from logistic regression coefficients controlling for demographics, criminal and drug-use histories, and time in treatment program.

arrested on a new charge as those without treatment, but they were significantly more likely to be drug free. Any participation in treatment, whether successful or not, produced significantly beneficial effects for subsequent drug use but not on subsequent arrests. Those who completed treatment were, however, significantly more likely to have had positive outcomes, and those who completed treatment and attended aftercare were the least likely to have a new arrest or to have lapsed into drug use. Just under half of those who completed treatment and then attended aftercare would be expected to have a new arrest, compared to more than 75% of the group without treatment. When contrasted with the group with no treatment, those in the treated groups are 15-20 times more likely to be drug free. Of course, these larger effects are to be expected, both because the programs are specifically focused on drug use and because without treatment the probability of refraining from illicit drug use for 5 years is spectacularly low.

DISCUSSION

The typically longstanding drug and criminal careers of offenders coming to the attention of the criminal justice system are not specific to Delaware, and any endeavor to curtail these behaviors requires substance abuse treatment that is both intensive and extensive. Delaware has responded to this need by instituting its continuum of primary (in-prison), secondary (work-release), and tertiary (aftercare) TC treatment corresponding to sentence mandates. Earlier analyses of the Delaware continuum (Inciardi et al. 1997; Inciardi, Martin, & Surratt, 2001; Martin et al., 1999) as well as the new 5-year outcome data presented here all indicate that clients who completed secondary treatment (some of whom also completed primary treatment) were significantly more likely than those with no treatment or those who dropped out of treatment to remain drug free and arrest free at 18 months, 42 months, and now 60 months after release from prison. In addition, the first analyses of 60-month data now available on Delaware clients who received tertiary treatment (the TC aftercare program implemented in 1996) suggest that treatment graduates who participate in aftercare programming surpass treatment graduates who do not receive continuing care in remaining drug free and arrest free at both 42 and 60 months. These results provide continuing support for the beneficial effects of participation in transitional and community TC treatment for drug-involved offenders.

The data presented in this article suggest that long-term treatment in correctional settings can have a major impact on the potential for relapse and recidivism among drug-involved offenders. One might still argue, however, that the effects of treatment are short-lived. After all, among the treatment graduates, 58% had been rearrested and 79% had relapsed to drug use by the time of the 60-month follow-up. Moreover, even among the treatment graduates who also had aftercare, 52% had been rearrested and 71% had relapsed. But, in counterpoint, therapeutic communities in general and corrections-based therapeutic communities in particular are dealing with the most difficult of all substance abusers: they are the most drug involved, the most criminally involved, and the most socially dysfunctional. As such, positive changes typically occur in small increments.

Additionally, when considering that substance abuse is a chronic and relapsing disease, one begins to realize how conservative the measure used in this analysis is. As noted earlier, *relapse to drug use* as used here was defined as *any* illegal drug use since release. As such, the use of cocaine or marijuana on even one day or one occasion constituted relapse according to this definition. Nevertheless, some 30% of the graduates with aftercare remained abstinent for 5 years, as measured by self-report and urine testing. This effect is

quite possibly a lower limit of the estimate of treatment efficacy that would increase with less stringent criteria for relapse to drug use.

Treatment participation and completion are the focus of these analyses, but it is obvious that treatment participation comprises only part of the explanation for the phenomena of relapse and recidivism. The current analyses attempted to address some other possible explanations by modeling the effects of demographic characteristics, prior criminal activities, and drug-use history on relapse and rearrest. Nonetheless, important control or confounding variables are undoubtedly lacking. It is obvious that the models estimated, although significant, are not accounting for all of the variance in predicting relapse and recidivism. It is probable that important control variables and confounding variables for group effects have not been modeled. One large potential area that needs to be considered is the selection of clients into treatment and the suitability of the treatment that clients receive. Similarly, the differences between voluntary versus compulsory treatment have not been addressed. Both of these issues need to be operationalized and incorporated in any comprehensive model involving treatment effects predicting to relapse and recidivism.

It should also be noted that the 60-month outcome data presented here are based on modest sample sizes that are insufficient for analyses of all possible combinations of treatment participation. For example, the analyses presented here did not examine the unique effects of participating in the in-prison TC program (KEY). In fact, the long-term data actually do not find a unique effect of in-prison treatment alone, although graduates of the institutional TC are more likely to remain in treatment through work release and aftercare. Given the widespread existence in corrections of prison TCs as opposed to traditional TCs, this is an area to be examined carefully in future research.

Despite these limitations, the present data speak to the value of treatment in work-release and parole settings and the importance of retention in treatment in increasing long-term abstinence from drug use and criminal activity. More importantly, the data also support some long-held beliefs about the beneficial effects of transitional and aftercare treatment during reentry (e.g., De Leon, 1990-1991, 2000; Inciardi & Scarpitti, 1992; Knight et al., 1999; Wexler et al., 1999). Transitional programming appears to provide a critical bridge between institutional confinement and community reentry by providing assistance for the psychological, social, and legal obstacles that can place drug-involved offenders at risk for relapse and recidivism during work release and parole. In 1935, for example, just a year after the term *addiction* first appeared in the American Psychiatric Association's *Standard Classified Nomenclature of Disease*, the U.S. Public Health Service opened its first "narcotics farm" in Lexington, Kentucky. A second facility was opened in

Fort Worth, Texas, 3 years later. They were called *farms* because clients participated in agricultural work during their treatment sojourns. In reality, however, both facilities were prison hospitals established for the treatment of addiction to narcotics while at the same time designed to alleviate prison crowding in other parts of the federal system (White, 1998).

It was anticipated from the outset that the treatment approach at the new federal establishments would be highly effective because, at the very least, the hospitals were designed to treat not only the physical dependence but also the mental and emotional problems thought to be related to addiction (Maddux, 1978). This was an advanced conception, because until then treatment for a narcotics problem had focused exclusively on physical dependence. And there were other innovations, including a drug-free environment and access to educational and vocational services as well as recreational and religious activities. When the patients were followed-up, however, treatment outcomes were disappointing. In a study of 1,881 patients discharged from the Lexington facility to the New York City area, for example, some 90% had become readdicted within 1 to 4.5 years (Hunt & Odoroff, 1962). Other studies documented that 90% to 96% treated at Lexington returned to active addiction, most within 6 months of discharge (White, 1998). Although Dr. Victor H. Vogel, the medical officer in charge of the Lexington program, tried to put a positive spin on the outcome data by suggesting that the treatment results were better than those of such other chronic diseases as diabetes and cancer (White, 1998), the studies underscored the limited role of institutionally based treatment alone in reducing the likelihood of subsequent relapse. What the Lexington and Fort Worth experiences did suggest was the need for a continuum of treatment with community aftercare as a crucial component (Brown, 1979). The data presented in this article present some interesting parallels and comparisons with the Lexington and Fort Worth experiences, emphasizing the importance of treatment followed by aftercare for criminal justice clients.

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